This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

**Usage guidelines**

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

+ *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.

+ *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.

+ *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.

+ *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

**About Google Book Search**

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at `http://books.google.com/`

Chem
5
41

Digitized by Google

Chem 5.41

Harvard College Library

FROM

The Library

SCIENCE CENTER LIBRARY

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

# ULTRA-VIOLET RAYS

REFERENCES TO MATERIAL IN
THE NEW YORK PUBLIC LIBRARY

THE NEW YORK
PUBLIC LIBRARY
1915

Digitized by Google

Digitized by Google

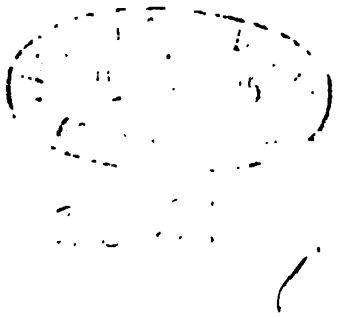
# ULTRA-VIOLET RAYS

REFERENCES TO MATERIAL IN
THE NEW YORK PUBLIC LIBRARY

THE NEW YORK
PUBLIC LIBRARY
1915

Digitized by Google

Chem 5.41



REPRINTED JUNE 1915
FROM THE
BULLETIN OF THE NEW YORK PUBLIC LIBRARY
OF
JUNE 1915

form p-58 [v1-19-15 750]

Digitized by Google

# ULTRA-VIOLET RAYS

A List of References to Material in The New York Public Library

Compiled by William B. Behrens, Division of Technology

1852

1. **Stokes.** The change of refrangibility of light. (Philosophical transactions, London, 1852, part 2, p. 463-562.) * **EC**

1854

2. **Eisenlohr,** W. Ueber die Wirkung des violetten und ultravioletten unsichtbaren Lichtes. (Annalen der Physik und Chemie, Leipzig, v. 93, 1854, p. 623-626.) **PAA**

1857

3. **Guillemin,** M. Développement de la matière verte des végétaux et flexion de tiges sous l'influence des rayons ultra-violets. (Comptes rendus, Paris, v. 45, July 13, 1857, p. 62-65.) * **EO**

1860

4. **Ueber** die Brechbarkeit der ultravioletten Strahlen, beobachtet mit verschiedenen Prismen von Quarz; vom Fürsten zu Salm-Horstmar. (Annalen der Physik und Chemie, Leipzig, v. 109, 1860, p. 158-159.) **PAA**

1863

5. **Mascart,** M. Sur les raies du spectre solaire ultra-violet. (Comptes rendus, Paris, v. 57, Nov. 9, 1863, p. 789-791.) * **EO**

1864

6. **Mascart,** M. Determination des longueurs d'onde de rayons lumineux et des rayons ultra-violets. (Comptes rendus, Paris, v. 58, June 13, 1864, p. 1111-1114.) * **EO**

1869

7. **Mascart,** M. Sur les spectres ultra-violets. (Comptes rendus, Paris, v. 69, Aug. 2, 1869, p. 337-338.) * **EO**

8. —— Sur la visibilité des rayons ultra-violets. (Comptes rendus, Paris, v. 68, Feb. 15, 1869, p. 402-403.) * **EO**

1872

9. **Sekulic,** M. Ultraviolette Strahlen sind unmittelbar sichtbar. (Annalen der Physik und Chemie, Leipzig, v. 146, 1872, p. 157-158.) **PAA**

1875

10. **Sauer,** L. Experimente über die Sichtbarkeit ultravioletter Strahlen. (Annalen der Physik und Chemie, Leipzig, v. 155, 1875, p. 602-615.) **PAA**

1877

11. **Herschel,** A. S. Visibility of the ultra-violet rays. (Nature, London, v. 16, May 10, 1877, p. 22-23.) **OA**

1878

12. **Soret,** J. L. Recherches sur l'absorption des rayons ultra-violets par diverses substances. (Comptes rendus, Paris, v. 86, March 18, 1878, p. 708-711; April 29, 1878, p. 1062-1064.) * **EO**

1879

13. **Cornu,** A. Observation de la limite ultra-violette du spectre solaire à diverses altitudes. (Comptes rendus, Paris, v. 89, Nov. 17, 1879, p. 808-814.) * **EO**

14. —— Sur la limite ultra-violette du spectre solaire. (Comptes rendus, Paris, v. 88, June 2, 1879, p. 1101-1108.) * **EO**

15. **Soret,** J. L. Sur la transparence des milieux de l'œil pour les rayons ultra-violets. (Comptes rendus, Paris, v. 88, May 19, 1879, p. 1012-1015.) * **EO**

16. **Soret,** J. L., and A. A. Rilliet. Spectres d'absorption ultra-violets des éthers azotiques et azoteux. (Comptes rendus, Paris, v. 89, Nov. 3, 1879, p. 747-749.) * **EO**

1880

17. **Cornu,** A. Sur la loi de répartition suivant l'altitude de la substance absorbant dans l'atmosphère les radiations so-



Digitized by Google

*1880, continued.*

laires ultra-violettes. (Comptes rendus, Paris, v. 90, April 26, 1880, p. 940-946.) *EO

18. **Schoenn,** J. L. Ueber ultraviolette Strahlen. (Annalen der Physik und Chemie, Leipzig, v. 9, 1880, p. 483-492; v. 10, 1880, p. 143-148.) PAA

1881

19. **Chardonnet,** E. Sur l'absorption des rayons ultra-violets par quelques milieux. (Comptes rendus, Paris, v. 93, Aug. 29, 1881, p. 406-408.) *EO

20. **Cornu,** A. Sur l'absorption atmosphérique des radiations ultra-violettes. (Journal de physique, Paris, v. 10, 1881, p. 5-17.) PAA

1883

21. **Chardonnet,** E. Vision des radiations ultra-violettes. (Comptes rendus, Paris, v. 96, Feb. 19, 1883, p. 509-511.) *EO

22. **Hartley,** W. N. Investigation by means of photography of the ultra-violet spark spectre emitted by metallic elements and their combinations under varying conditions. (Chemical news, London, v. 48, Oct. 26, 1883, p. 195.) PKA

23. **Liveing,** G. D., and J. Dewar. Notes on the absorption of ultra-violet rays by various substances. (Royal Society, Proceedings, London, v. 35, 1883, p. 71-74.) *EC

24. —— On the ultra-violet spectra of the elements. (Philosophical transactions, London, v. 174, 1883, p. 187-222.) *EC

25. **Soret,** J. L. Sur l'absorption des rayons ultra-violets par les milieux de l'œil et par quelques autres substances. (Comptes rendus, Paris, v. 97, Aug. 22, 1883, p. 572-575; Sept. 10, 1883, p. 642-644.) *EO

26. —— Sur la visibilité des rayons ultra-violets. (Comptes rendus, Paris, v. 97, July 30, 1883, p. 314-316.) *EO

1884

27. **Hartley,** W. N. Notes upon certain photographs of the ultra-violet spectra of elementary bodies. (Chemical Society, Journal, London, v. 41, 1884, p. 84-90.) PKA

28. **Zenger,** Ch. V. Visibilité des rayons ultra-violets, à l'aide du parallelipipède de dispersion. (Comptes rendus, Paris, v. 98, April 21, 1884, p. 1017.) *EO

1887

29. **Cornu,** A. Ueber das ultraviolette Spectrum des Wasserstoffs. (Annalen der Physik und Chemie, Beiblätter, Leipzig, v. 11, 1887, p. 582-583.) PAA

30. **Schjerning,** W. Ueber die Absorption der ultravioletten Lichtstrahlen durch verschiedene optische Gläser. (Annalen der Physik und Chemie, Beiblätter, Leipzig, v. 11, 1887, p. 340-341.) PAA

1888

31. **Bichat,** M. E. Action of light upon the static charge. (Electrician, London, v. 21, Oct. 12, 1888, p. 739.) †† VGA

32. **Borgmann,** J. On the influence of light on electric discharge. (Philosophical magazine, London, series 5, v. 25, 1888, p. 272-273.) OA

33. **Deslandres,** H. Spectre de bandes ultra-violet des composés hydrogénés et oxygénés du carbone. (Comptes rendus, Paris, v. 106, March 19, 1888, p. 842-846.) *EO

34. **Hartley,** W. N. Photographie der ultravioletten Spectra der Elemente unter verschiedenen Bedingungen. (Annalen der Physik und Chemie, Beiblätter, Leipzig, v. 12, 1888, p. 194.) PAA

35. **Influence** of light on the electric discharge. (Electrician, London, v. 21, Sept. 28, 1888, p. 659.) † VGA

36. **Influence** of light upon the electrostatic charges. (Electrician, London, v. 20, March 30, 1888, p. 578.) VGA

37. **Liveing,** G. D., and J. Dewar. Absorption-spectrum, luminous and ultra-violet, of large masses of oxygen. (Philosophical magazine, London, v. 26, Sept., 1888, p. 286-291.) OA

38. **Wiedemann,** E., and H. Ebert. Influence of light upon electric discharge. (Electrician, London, v. 20, May 4, 1888, p. 731.) VGA

39. —— On the effect of light on the electric discharge. (Electrician, London, v. 20, Feb. 3, 1888, p. 324.) VGA

1894

40. **Eder,** Joseph M., and E. Valenta. Absorptionsspectren von farblosen und gefärbten Gläsern, mit Berücksichtigung des Ultraviolett. (Kaiserliche Akademie der Wissenschaften in Wien. Mathematisch-naturwissenschaftliche Klasse, Wien, Bd. 61, 1894, p. 284-295.) *EF

Digitized by Google

1896

41. **Borel,** G. Adolphe. Über die Brechung und Zerstreuung ultravioletter Strahlen in einigen krystallisirten Substanzen. (Annalen der Physik und Chemie, Beiblätter, Leipzig, v. 20, 1896, p. 42.) **PAA**

42. **Graebe,** H. Untersuchung des Absorptionsvermogens des Blutpigmentes für violette und ultraviolette Strahlen. (Annalen der Physik und Chemie, Beiblätter, Leipzig, v. 20, 1896, p. 127.) **PAA**

1897

43. **Beattie,** J. C. Conductance produced in gases by ultra-violet light. (Philosophical magazine, London, v. 43, May, 1897, p. 418-439.) **OA**

44. **Buss,** O. Beiträge zur Spektralanalyse einiger toxikologisch und pharmakognostisch wichtiger Farbstoffe mit besonderer Berücksichtigung des Ultraviolett. (Annalen der Physik und Chemie, Beiblätter, Leipzig, v. 21, 1897, p. 130-131.) **PAA**

45. **Henry,** J. Experiments on the effect of ultra-violet light on iodine vapours. (Cambridge Philosophical Society, Proceedings, Cambridge, v. 9, 1897, p. 319-322.) ***EC**

46. **Kelvin,** Lord, and others. On the conductive effect produced in air by Röntgen rays and ultra-violet light. (Nature, London, v. 55, Feb. 11, 1897, p. 343-347.) **OA**

1898

47. **Bechstein,** O. The "Kuch" quartz mercury vapor lamp. (Scientific American supplement, New York, v. 66, Nov. 28, 1898, p. 348-349.) **†† VA**

Illustrated description of the lamp in which quartz is substituted for glass.

48. **Bussion,** H. Messung der Geschwindigkeit der elektrisirten Teilchen in den durch das ultraviolette Licht hervorgerufenen Entladungen. (Annalen der Physik und Chemie, Beiblätter, Leipzig, v. 22, 1898, p. 802.) **PAA**

49. **Hartley,** W. N., and J. Dobbie. The ultra-violet absorption spectra of some closed chain carbon compounds. (Chemical Society, Journal, London, v. 73, 1898, p. 598-606.) **PKA**

50. **Kelvin,** Lord. Continuity in undulatory theory of condensational-rarefactional waves in gases, liquids, and solids. (Philosophical magazine, London, v. 45, Oct., 1898, p. 494-500.) **OA**

51. **Wilson,** C. T. R. On the condensation nuclei produced in gases by the action of ultra-violet rays. (Royal Society, Proceedings, London, v. 64, 1898, p. 127-130.) ***EC**

52. **Zickler,** Karl. Telegraphy by means of ultra-violet light. (Electrician, London, v. 41, Sept. 23, 1898, p. 720-722.) **VGA**

1899

53. **Blyth,** A. Wynter. Ultra-violet absorption of albumenoids in relation to that of tyrosin. (Chemical news, London, v. 80, July 21, 1899, p. 32.) **PKA**

54. **Dussaud.** Sur la transmission des sons par les rayons ultra-violets. (Comptes rendus, Paris, v. 128, Jan. 16, 1899, p. 171.) ***EO**

1901

55. **Glatzel,** Bruno. Quantitative Untersuchungen über Absorption und Reflexion im Ultraviolett. Berg: A. Hopfer, 1901. 40 p., 1 l. 8°. **PET p.v.3, no.4**

1902

56. **Baker,** W. C. Notes on the influence of ultra-violet radiation on the discharge in a vacuum tube having a polished zinc electrode. (Cambridge Philosophical Society, Proceedings, Cambridge, v. 11, 1902, p. 472-476.) ***EC**

1903

57. **Crookes,** Sir William. The ultra-violet spectrum of radium. (Royal Society, Proceedings, London, v. 72, 1903, p. 295-304.) ***EC**

58. **Hammer,** William J. The treatment of disease by ultra-violet light. (American Institute of Electrical Engineers, Transactions, New York, v. 21, April 17, 1903, p. 393-402.) **VGA**

59. **Wood,** R. W. On screens transparent only to ultra-violet light and their use in spectrum photography. (Astrophysical journal, Chicago, v. 17, 1903, p. 133-140.) **OA**

1904

60. **Airey,** Harold Morris. On the determination of wave-lengths in the extreme ultra-violet portion of the spectrum. (Manchester Literary and Philosophical Society. Memoirs and proceedings, Manchester, v. 49, 1904, no. 3.) ***EC**

1905

61. Eine **Neue** Ultraviolettlampe. (Chemiker-Zeitung, Cöthen, v. 29, Jan. 4, 1905, p. 4-5.) **VOA**

Digitized by Google

1906

62. **Baly,** E. C. C., and C. H. Desch. Ultra-violet absorption spectra in relation to physico-chemical processes. (Astrophysical journal, Chicago, v. 23, 1906, p. 110-127.) **OA**

63. **Kinraide,** Thomas B. Ultra-violet lamp. (Electrical review, New York, v. 48, May 19, 1906, p. 775.) **VGA**

Describes inexpensive lamp capable of comparatively continuous use.

1907

64. **Baskerville,** Charles. Ultra-violet light in the laboratory and in practice. (Chemical news, London, v. 95, May 31, 1907, p. 255-256.) **PKA**

65. **Bussmann,** Oskar. Die Quarzlampe von Dr. Küch. (Elektrotechnische Zeitschrift, Berlin, v. 28, Sept. 19, 1907, p. 932-936.) **VGA**

Abstract in Electrical world, New York, v. 50, Oct. 19, 1907, p. 769, *VGA*.

66. **Narcosis** by blue rays of light. (Illuminating engineer, New York, v. 2, Dec., 1907, p. 751.) **VOKA**

1908

67. **Another** effect of ultra-violet light. (Illuminating engineer, London, v. 1, Nov., 1908, p. 955.) **VOKA**

68. **Arc** lamps for photographic work. (Illuminating engineer, London, v. 1, Sept., 1908, p. 771.) **VOKA**

69. **Bees** and ultra-violet light. (Illuminating engineer, London, v. 1, Aug., 1908, p. 689.) **VOKA**

70. **Birch,** and Hirschfeld. Further remarks on the injury to the eye caused by ultra-violet light. (Illuminating engineer, London, v. 1, Sept., 1908, p. 771.) **VOKA**

71. **Blondel,** A. Einfluss der ultravioletten Strahlen der kunstlichen Lichtquellen auf die Ermüdung des Auges. (Elektrotechnische Zeitschrift, Berlin, v. 29, Sept. 24, 1908, p. 947-948.) **VGA**

Abstract in Electrical world, New York, v. 52, Oct. 17, 1908, p. 858, *VGA*.

72. **Bussmann,** Oskar. New facts about the quartz lamp. (Electrical review and western electrician, Chicago, v. 53, Oct. 17, 1908, p. 588-589.) **VGA**

73. **Detector** of ultra-violet rays. (Scientific American, New York, v. 98, April 25, 1908, p. 298.) **†† VA**

74. **Effect** of light upon the eye. (Illuminating engineer, New York, v. 2, Jan., 1908, p. 819.) **VOKA**

75. **Godfrey,** Hollis. The ultra-violet microscope. (Atlantic monthly, Boston, v. 101, 1908, p. 213-218.) ***DA**

76. **Harmful** effect of ultra-violet rays on the human eye. (Scientific American, New York, v. 99, Oct. 24, 1908, p. 278.) **†† VA**

77. **Hopfelt,** Robert. Eine neue Kohlenfaden Quecksilberlampe. (Elektrotechnische Zeitschrift, Berlin, v. 29, Oct. 8, 1908, p. 994-995.) **VGA**

Illustrated description with photometric curves.

78. **Illuminating** and eyesight. (Illuminating engineer, London, v. 1, Jan., 1908, p. 58-63.) **VOKA**

79. **Modern** illuminants and ultra-violet rays. (Electrical world, New York, v. 52, Oct. 3, 1908, p. 716-717.) **VGA**

A discussion on the possible injury to the eyes from ultra-violet rays.

80. **Prevalence** of cataract among glass-workers. (Illuminating engineer, London, v. 1, Oct., 1908, p. 820.) **VOKA**

81. **Schanz,** Fritz, and Karl Stockhausen. How are we to protect our eyes from the ultra-violet rays yielded by artificial sources of light. (Illuminating engineer, London, v. 1, Jan., 1908, p. 70.) **VOKA**

82. —— Die Schädigung des Auges durch Einwirkung des ultravioletten Lichtes. (Elektrotechnische Zeitschrift, Berlin, v. 29, Aug. 13, 1908, p. 777-779.) **VGA**

Abstract in Electrical world, New York, v. 52, Sept. 5, 1908, p. 529, *VGA*.

83. **Some** effects of light, visible and invisible. (Illuminating engineer, London, v. 1, Sept., 1908, p. 753-756.) **VOKA**

84. **Stockhausen,** Karl. The illumination of work-places and work-rooms. (Illuminating engineer, London, v. 1, Jan., 1908, p. 71.) **VOKA**

85. **Ultra-violet** element in daylight and artificial light. (Illuminating engineer, London, v. 1, Sept., 1908, p. 705-706.) **VOKA**

86. **Voege,** W. Ist durch das ultraviolette Licht der modernen künstlichen Lichtquellen eine Schädigung des Auges zu befürchten? (Elektrotechnische Zeitschrift, Berlin, v. 29, Aug. 14, 1908, p. 779-782.) **VGA**

Abstract in Electrical world, New York, v. 52, Sept. 5, 1908, p. 530, *VGA*.

1909

87. **Aubel,** Edm. van. Sur la production d'ozone sous l'influence de la lumière ultraviolette. (Comptes rendus, Paris, v. 149, Nov. 29, 1909, p. 983-985.) ***EO**

88. **Bellile,** P. The eyesight of wireless operators and the effect of ultra-violet rays. (Illuminating engineer, London, v. 2, July, 1909, p. 490.) **VOKA**

Digitized by Google

*1909, continued.*

**89. Billon-Daguerre.** Mode de sterilisation intégrale des liquides par les radiations de très courte longueur d'onde. (Comptes rendus, Paris, v. 149, Nov. 8, 1909, p. 810-812.) ***EO**

**90. Brunton,** David W. Mining and metallurgy in western United States. (American Institute of Mining Engineers, Transactions, New York, v. 40, 1909, p. 554.) **VHA**

**91. Bussmann,** Oskar. Die neue Form der Quarzlampe von Dr. Küch. (Elektrotechnische Zeitschrift, Berlin, v. 30, April 29, 1909, p. 395-396.) **VGA**

Abstracted in Electrical review and western electrician, Chicago, v. 54, June 5, 1909, p. 1053, *VGA.*

**92. Courmont,** Jules, and TH. NOGIER. Sur la faible pénétration des rayons ultraviolets à travers les liquides contenant des substances colloïdes. (Comptes rendus, Paris, v. 149, Aug. 2, 1909, p. 364-365.) ***EO**

**93. Courmont,** Jules, and others. Effets au point de vue chimique de l'immersion dans l'eau de la lampe en quartz à vapeur de mercure. (Comptes rendus, Paris, v. 149, July 12, 1909, p. 160-161.) ***EO**

**94. Dornic,** and DAIRE. Contribution à l'étude de la stérilisation par les rayons ultra-violets. (Comptes rendus, Paris, v. 149, Aug. 2, 1909, p. 354-356.) ***EO**

**95. Eyesight** of wireless-telegraph operators. (Illuminating engineer, London, v. 2, May, 1909, p. 291-292.) **VOKA**

**96. Germicide** properties of ultra-violet rays. (Electrical review and western electrician, Chicago, v. 55, Nov. 27, 1909, p. 1025.) **VGA**

**97. Henri,** Victor, and JOSEPH SCHNITZLER. Action des rayons ultra-violets sur la fermentation acétique du vin. (Comptes rendus, Paris, v. 149, July 26, 1909, p. 312-314.) ***EO**

**98. Henri,** Victor, and others. Sterilization of liquids by ultra-violet rays. (English patent, 1909, no. 28,067.) **Patent Room**

**99. Kernbaum,** Miroslaw. Décomposition de l'eau par les rayons ultra-violets. (Comptes rendus, Paris, v. 149, July 26, 1909, p. 273-275.) ***EO**

**100.** —— Zersetzung des Wassers durch ultra-violette Strahlen. (Wasser und Abwasser, Leipzig, v. 2, Nov. 20, 1909, p. 482.) **VDL**

**101. Mannich,** C. Lichtfilter für ultraviolette Strahlen. (Chemiker-Zeitung, Cöthen, v. 33, Nov. 4, 1909, p. 1167-1168.) **VOA**

**102. Maquenne,** L., and DEMOUSSY. Influence des rayons ultra-violets sur la végétation des plantes vertes. (Comptes rendus, Paris, v. 149, Nov. 8, 1909, p. 756-760.) ***EO**

**103. Maurain,** and WARCOLLIER. Action des rayons ultra-violets sur le cidre en fermentation. (Comptes rendus, Paris, v. 149, July 12, 1909, p. 155-157.) ***EO**

**104. Nogier,** Thomas. Appareil à stérilisation d'eau par les rayons ultra-violets. (French patent, 1909, no. 420,281.) **Patent Room**

**105. Pidduck,** F. B. Bemerkung über die Absorption von ultraviolettem Licht durch verdünnte Lösungen. (Wasser und Abwasser, Leipzig, v. 2, Nov. 20, 1909, p. 136.) **VDL**

**106. Voege,** W. The protection of the eyes from ultra-violet light. (Illuminating engineer, London, v. 2, Aug., 1909, p. 543-546.) **VOKA**

## 1910

**107. Action** des rayons ultraviolets sur le vin en fermentation. (Association des chimistes de sucrerie et de distillerie de France et des colonies, Bulletin, Paris, v. 28, Nov., 1910, p. 317-318.) **VOA**

**108. Banque** du Radium. Appareil à stériliser les liquides par les rayons ultraviolets. (French patent, 1910, no. 426, 297.) **Patent Room**

**109.** —— Appareil à stériliser les liquides à l'aide des rayons ultra-violets. (French patent, 1910, no. 428,666.) **Patent Room**

**110. Berthelot,** Daniel, and HENRY GAUDECHON. Principaux types de photolyse des composés organiques par les rayons ultraviolets. (Comptes rendus, Paris, v. 151, Dec. 27, 1910, p. 1349-1352.) ***EO**

**111. Bierry,** Henri, and others. Action des rayons ultraviolets sur certains hydrates de carbone. (Comptes rendus, Paris, v. 151, July 25, 1910, p. 316-318.) ***EO**

**112. Cernovodeanu,** Mlle. P., and VICTOR HENRI. Comparaison des actions photochimiques et abiotiques des rayons ultraviolets. (Comptes rendus, Paris, v. 150, Feb. 28, 1910, p. 549-551.) ***EO**

**113.** —— Étude de l'action des rayons ultra-violets sur les microbes. (Comptes rendus, Paris, v. 150, Jan. 3, 1910, p. 52-54.) ***EO**

**114. Chemical** effects of ultra-violet rays. (Electrical review and western electrician, Chicago, v. 57, July 23, 1910, p. 173.) **VGA**

**115. Courmont,** Jules, and THOMAS NOGIER. Trinkwassersterilisation durch ultraviolette Strahlen. (Wasser und Abwasser, Leipzig, v. 2, May 7, 1910, p. 481-482.) **VDL**

Digitized by Google

*1910, continued.*

116. —— Die ultravioletten Strahlen. (Wasser und Abwasser, Leipzig, v. 3, Nov. 12, 1910, p. 303-305.) **VDL**

117. **Deeleman.** Die Trinkwassersterilisation mittels ultravioletter Strahlen. (Wasser und Abwasser, Leipzig, v. 3, Oct. 22, 1910, p. 240-241.) **VDL**

118. **Effects** of ultra-violet rays on the eye. (Electrical review and western electrician, Chicago, v. 56, Jan. 15, 1910, p. 124.) **VGA**

119. **English** quartz lamps. (Electrical review and western electrician, Chicago, v. 57, Nov. 5, 1910, p. 924.) **VGA**

Short account of "Silica" and "Quartzlite" lamps.

120. **Gariel.** Glare worse than ultra-violet rays. (Electrical review and western electrician, Chicago, v. 57, Oct. 22, 1910, p. 827.) **VGA**

Effect of ultra-violet rays on the eyes.

121. **Garnier,** A. R. Les applications de la lampe à vapeur de mercure. (L'électricien, Paris, v. 39, Feb. 26, 1910, p. 133-135.) **VGA**

Discusses its application to lighting and the production of high-frequency currents.

122. **Grant,** Kenneth C. Sterilization of polluted water by ultra-violet rays. (Engineering news, New York, v. 64, Sept. 15, 1910, p. 275.) **VDA**

Describes experiments in progress in the laboratory of the Sorbonne, at Paris.

123. **Henri,** Victor, and others. Apparatus for destroying bacteria in water supply systems. (English patent, 1910, no. 25,882.) **Patent Room**

124. —— Apparatus for sterilizing liquids by ultra-violet rays. (English patent, 1910, no. 23,077.) **Patent Room**

125. —— Apparatus for treating liquids with ultra-violet rays. (English patent, 1910, no. 12,948.) **Patent Room**

126. —— Apparatus for the treatment of liquids by means of ultra-violet rays. (English patent, 1910, no. 12,947.) **Patent Room**

127. —— Apparatus for treating liquids by ultra-violet rays. (English patent, 1910, no. 18,458.) **Patent Room**

128. —— Apparatus for treating liquids by means of ultra-violet rays. (English patent, 1910, no. 18,768.) **Patent Room**

129. —— Nouvelles recherches sur la stérilisation de grandes quantités d'eau par les rayons ultraviolets. (Comptes rendus, Paris, v. 151, Oct. 17, 1910, p. 677-680.) ***EO**

130. —— Perfectionnement aux appareils pour la stérilisation des liquides. (French patent, 1910, no. 424,369.) **Patent Room**

131. —— Sterilization of liquids. (English patent, 1910, no. 14,129.) **Patent Room**

132. —— Sterilization of liquids by ultra-violet rays. (English patent, 1910, no. 25,883.) **Patent Room**

133. **Henri-Cernovodeanu,** Mme. V. Action des rayons ultraviolets sur les bacilles tuberculeux et sur la tuberculine. (Comptes rendus, Paris, v. 151, Oct. 24, 1910, p. 724-726.) ***EO**

134. **Leblanc,** Maurice, the younger. La lampe en quartz, à vapeur de mercure. (Lumière électrique, Paris, série 2, tome 12, Nov. 5, 1910, p. 163-169.) **††VGA**

Historical characteristics of the new lamp.

135. —— Mercury-vapor quartz lamps. (Electrical review and western electrician, Chicago, v. 57, Dec. 17, 1910, p. 1248-1250.) **VGA**

Describes luminous efficiency of the quartz lamp.

136. **Lehmann,** H. Über ein Filter für ultraviolette Strahlen und seine Anwendung. (Chemiker-Zeitung, Cöthen, v. 34, Sept. 29, 1910, p. 1032.) **VOA**

137. —— —— (Physikalische Zeitschrift, Leipzig, v. 11, Nov. 15, 1910, p. 1039-1047.) **PAA**

138. **Lombard,** Maurice. Sur les effets chimiques et biologiques des rayons ultraviolets. (Comptes rendus, Paris, v. 150, Jan. 24, 1910, p. 227-229.) ***EO**

139. **Maurain,** and WARCOLLIER. Action des rayons ultraviolets sur le vin en fermentation. (Comptes rendus, Paris, v. 150, Feb. 7, 1910, p. 343-344.) ***EO**

140. **Miller,** Warren H. Quartz tube mercury-vapor lamps. (Electrical world, New York, v. 55, March 17, 1910, p. 691-692.) **VGA**

141. **Nogier,** Thomas. Appareil de stérilisation urbaine des eaux potables par les rayons ultra-violets. (French patent, 1910, no. 426,606.) **Patent Room**

142. **Otto,** M. P. Appareil pour la stérilisation des eaux par les rayons ultra-violets. (French patent, 1910, no. 421,296.) **Patent Room**

143. **Pougnet,** Jean. Action des rayons ultraviolets sur les plantes à coumarine et quelques plantes dont l'odeur provient de glucosides dédoublés. (Comptes rendus, Paris, v. 151, Sept. 19, 1910, p. 566-569.) ***EO**

144. **Practical** sterilization by means of ultra-violet rays. (Scientific American, New York, v. 102, May 21, 1910, p. 427.) **††VA**

145. **Quartz** lamps in photography. (Electrical review and western electrician, Chicago, v. 57, Nov. 12, 1910, p. 971.) **VGA**

Digitized by Google

*1910, continued.*

146. **Recklinghausen,** Max. Sterilization of water by means of quartz lamps. (Electrical review, London, v. 67, Sept. 2, 1910, p. 378-379.) **VGA**

147. **Sensitiveness** of different eyes to ultra-violet light. (Illuminating engineer, London, v. 3, Sept., 1910, p. 559-560.) **VOKA**

148. **Steinmetz,** C. P. The physiological effect of radiation. (Illuminating engineer, London, v. 3, Feb., 1910, p. 93-96.) **VOKA**

149. **Sterilisation** von Trinkwasser mit ultravioletten Strahlen. (Wasser und Abwasser, Leipzig, v. 3, Oct. 22, 1910, p. 239.) **VDL**

150. **Sterilization** by ultra-violet light. (Electrical review and western electrician, Chicago, v. 56, March 12, 1910, p. 535-536.) **VGA**

Describes various methods as tested, giving time of exposure of liquids with various currents.

151. **Sterilization** by ultra-violet rays. (Electrical review and western electrician, Chicago, v. 57, Nov. 12, 1910, p. 1001.) **VGA**

Describes the "Nogier" and "Silica" sterilizers.

152. **Stockhausen,** Karl. Glare, its causes and effects. (Illuminating engineer, London, v. 3, March, 1910, p. 181-182.) **VOKA**

153. **Systematische** Untersuchungen über die Wirksamkeit der verschiedenen ultravioletten Strahlen der Quecksilberdampf Quartzmantel-Bogenlampe. (Electrotechnik und Maschinenbau, Wien, v. 28, Aug. 7, 1910, p. 669-671.) **VGA**

A review of investigations at the physiological laboratory of the Sorbonne of the bactericidal effects of these rays.

154. **Urbain,** E., and A. Feige. Stérilisation des grandes masses d'eau par l'ultraviolet. (Comptes rendus, Paris, v. 151, Oct. 31, 1910, p. 770-772.) ***EO**

155. **Urbain,** E., and Cl. Scal. Sur la stérilisation de l'eau par l'ultraviolet. (Comptes rendus, Paris, v. 150, Feb. 28, 1910, p. 548-549.) ***EO**

156. **Urbain,** E., and others. Employment of metals in the electric arc for the sterilization of liquids. (English patent, 1910, no. 4795.) **Patent Room**

Describes the use of a metal in the arc for the purpose of extending the spectrum farther into the violet than that of mercury.

157. **Vandevelde,** A. J. J. Über das Sterilisieren von Mehl und die Brotgarung. (Chemiker-Zeitung, Cöthen, v. 34, Oct. 6, 1910, p. 1061.) **VOA**

158. **Wartenberg,** H. Über die Ultravioletabsorption des Sauerstoffes. (Physikalische Zeitschrift, Leipzig, v. 11, Dec. 1, 1910, p. 1168-1172.) **PAA**

159. **Zimmerman,** J. D. Quartz tube mercury-arc lamp. (Electrical review and western electrician, Chicago, v. 57, Sept. 10, 1910, p. 523-525.) **VGA**

Detailed description of the lamp, giving its performance curve and candlepower distribution curve.

## 1911

160. **Agulhon,** H. Action des rayons ultra-violets sur les diastases. (Comptes rendus, Paris, v. 152, Feb. 13, 1911, p. 398-401.) ***EO**

161. **Banque** du Radium. Apparatus for sterilizing liquids by means of ultra-violet rays. (English patent, 1911, no. 15,010.) **Patent Room**

162. **Bell,** Louis. On the opacity of certain glasses for the ultra-violet. (Proceedings, American Academy of Arts and Sciences, Boston, v. 46, April, 1911, p. 669.) ***EA**

163. **Berthelot,** Daniel. Les rayons ultraviolets et leurs applications pratiques. (Société des ingenieurs civils de France, Mémoires et compte rendu des travaux, Paris, année 64, Dec., 1911, p. 859-951.) **VDA**

Lengthy discussion of the characteristics of the rays and their use in lighting, medicine, and water purification.

164. **Berthelot,** Daniel, and Henry Gaudechon. Action comparée des rayons ultraviolets sur les composés organiques à structure cyclique. Étude des sels minéraux en solution aqueuse. (Comptes rendus, Paris, v. 152, Feb. 13, 1911, p. 376-378.) ***EO**

165. —— La nitrification par les rayons ultraviolets. (Comptes rendus, Paris, v. 152, Feb. 27, 1911, p. 522-524.) ***EO**

166. **Bierry,** Henri. Action des rayons ultraviolets sur le saccharose. (Comptes rendus, Paris, v. 152, June 6, 1911, p. 1629-1632.) ***EO**

167. **Bierry,** Henri, and others. Action des rayons ultraviolets sur la glycerine. (Comptes rendus, Paris, v. 152, Feb. 27, 1911, p. 535-536.) ***EO**

Abstract in Journal of the Society of Chemical Industry, London, v. 30, 1911, p. 386, *VOA.*

168. **Black,** Nelson Miles. Artificial illumination as a factor in the production of ocular discomfort. (Illuminating Engineering Society, Transactions, New York, v. 6, March, 1911, p. 166-177.) **VOKA**

169. **Bujwid,** Odo. Über die Einwirkung der ultravioletten Strahlen auf Bakterien. (Journal für Gasbeleuchtung und Wasserversorgung, München, v. 54, Sept. 2, 1911, p. 853-858.) **VOA**

170. —— —— (Chemiker-Zeitung, Cöthen, v. 35, July 22, 1911, p. 806-807.) **VOA**

Digitized by Google

*1911, continued.*

171. **Busson,** H., and Ch. Fabry. La lumière ultra-violette. (Revue général des sciences pures et appliquées, Paris, v. 22, 1911, p. 309-322.) **OA**

172. **Chauchard,** A., and B. Mazoué. Action des rayons ultraviolets sur l'amylase, l'invertine et le mélange de ces deux diastases. (Comptes rendus, Paris, v. 152, June 12, 1911, p. 1709-1711.) ***EO**

173. **Courmont,** Jules. Die Sterilisation des Trinkwassers durch ultraviolette Strahlen. (Wasser und Abwasser, Leipzig, v. 4, Nov. 25, 1911, p. 515.) **VDL**

174. —— —— (Journal für Gasbeleuchtung und Wasserversorgung, München, v. 54, July 8, 1911, p. 675-678.) **VOA**

175. —— —— (Chemiker-Zeitung, Cöthen, v. 35, July 22, 1911, p. 806.) **VOA**

176. —— Sterilization of drinking water by ultra-violet radiations. (Smithsonian Institution, Report, Washington, 1911, p. 235-245.) ***EA**

177. **Courmont,** Jules, and Ch. Nogier. Deterioration of quartz lamps. (Electrical review and western electrician, Chicago, v. 59, Aug. 26, 1911, p. 426.) **VGA**

178. —— Diminution progressive du rendement en ultraviolet des lampes en quartz à vapeur de mercure, fonctionnant à haute température. (Comptes rendus, Paris, v. 152, June 19, 1911, p. 1746-1747.) ***EO**

179. **Don,** John, and John Chisholm. Sterilization by ultra-violet light. (In their: Modern methods of water purification, London, 1911, p. 230.) **VDL**

180. **Effect** of high temperature on the ultra-violet radiation from mercury vapour lamps. (Illuminating engineer, London, v. 4, Sept., 1911, p. 503.) **VOKA**

181. **Effect** of quartz lamps on plants. (Illuminating engineer, London, v. 4, June, 1911, p. 376.) **VOKA**

182. **Erlwein,** G. Die Reinigung des Trinkwassers von Bakterien mittels Ozons und ultravioletter Strahlen. (Chemiker-Zeitung, Cöthen, v. 35, Dec. 7, 1911, p. 1358.) **VOA**

183. **Euler,** H., and H. Ohlsén. Sur l'inversion de la saccharose dans les rayons ultra-violets. (Journal de chimie physique, Genève, v. 9, 1911, p. 416-422.) **PKA**

184. **Grimm,** and Weldert. Sterilisation von Wasser mittels ultra-violetter Strahlen. (Chemisches Zentralblatt, Berlin, Folge 5, v. 15, May 10, 1911, p. 1454.) **PKA**

Report on sterilization of water by 1200 candle power mercury vapor lamp.

185. —— —— (Journal für Gasbeleuchtung und Wasserversorgung, München, v. 54, July 15, 1911, p. 707.) **VOA**

186. **Guntz,** A., and J. Minguin. Contribution à l'étude des radiations ultraviolettes. (Comptes rendus, Paris, v. 152, Feb. 13, 1911, p. 372-373.) ***EO**

187. **Helbronner,** André, and M. Recklinghausen. Apparatus for sterilizing liquids by means of ultra-violet rays. (English patent, 1911, no. 21,829.) **Patent Room**

188. —— Appareil pour le traitement des liquides par les rayons ultra-violets. (French patent, 1911, no. 428,170.) **Patent Room**

189. —— Perfectionnements aux appareils pour les stériliser les liquids au moyen des rayons ultra-violets. (French patent, 1911, no. 434,855.) **Patent Room**

190. **Henri,** Victor. Influence de diverses conditions physiques sur le rayonnement ultraviolet des lampes à vapeur de mercure en quartz. (Comptes rendus, Paris, v. 153, Aug. 14, 1911, p. 426-429.) ***EO**

191. **Henri,** Victor, and others. Apparatus for treating liquids with ultra-violet rays. (English patent, 1911, no. 4895.) **Patent Room**

192. —— Apparatus for treating liquids with ultra-violet rays. (English patent, 1911, no. 8158.) **Patent Room**

193. —— Perfectionnements aux appareils pour le traitement des liquides par les rayons ultra-violets. (French patent, 1911, no. 425,406.) **Patent Room**

194. **Landau,** Marc. Action des rayons ultraviolets sur l'acide lactique. (Comptes rendus, Paris, v. 152, May 15, 1911, p. 1308-1309.) ***EO**

195. **Le Bon,** Gustave. Sur les variations de transparence du quartz pour la lumière ultraviolette, et sur la dissociation de la matière. (Comptes rendus, Paris, v. 153, July 3, 1911, p. 49-51.) ***EO**

196. **Massol,** L. Action des radiations ultraviolettes sur l'amidon. (Comptes rendus, Paris, v. 152, March 27, 1911, p. 902-904.) ***EO**

197. **Nogier,** Thomas. Apparatus for sterilizing liquids by the action of ultra-violet rays. (English patent 1911, no. 9660.) **Patent Room**

The mercury lamp which is employed is fitted in a casing through which the liquid flows.

198. **Pierce,** R. F. Quartz lamp. (Illuminating engineer, New York, v. 6, May, 1911, p. 133-137.) **VOKA**

199. **Pougnet,** Jean. Action des rayons ultraviolets sur les gousses vertes de vanille. (Comptes rendus, Paris, v. 152, May 1, 1911, p. 1184-1186.) ***EO**

200. **Pribram,** R., and A. Franke. Über Kondensation durch ultraviolettes Licht.

Digitized by Google

*1911, continued.*

(Berichte der Deutschen Chemischen Gesellschaft, Berlin, v. 44, 1911, p. 1035-1039.) **PKA**

201. **Recklinghausen,** Max. Sterilizing liquids by means of ultra-violet rays. (English patent, 1911, no. 6759.) **Patent Room**

The liquid is passed through a quartz helical tube or "worm" which surrounds the lamp emitting the ultra-violet rays.

202. **Remonce,** R. Dispositif pour la stérilisation des liquides par les rayons à faible longeur d'onde. (French patent, 1911, no. 434,784.) **Patent Room**

203. **Rochaix,** A., and G. COLIN. Action des rayons émis par la lampe en quartz à vapeurs de mercure sur la colorabilité des bacilles acido-résistants. (Comptes rendus, Paris, v. 153, Dec. 11, 1911, p. 1253.) ***EO**

204. **Schwarz,** L., and D. AUMANN. Über Trinkwasserbehandlung mit ultravioletten Strahlen. (Wasser und Abwasser, Leipzig, v. 4, Sept. 2, 1911, p. 320-321.) **VDL**

205. —— Weitere Mittelung über die Behandlung von Trinkwasser mit ultravioletten Strahlen. (Wasser und Abwasser, Leipzig, v. 4, Nov. 25, 1911, p. 515-516.) **VDL**

206. **Sterilization** of water supplies by ultra-violet rays. (Engineer, London, v. 111, June 16, 1911, p. 610-611.) **VA**

207. **Stoklasa,** Jules, and others. Über den Einfluss der ultravioletten Strahlen auf die Vegetation. (Centralblatt für Bakteriologie, Parasitenkunde und Infektionskrankheiten, Jena, Abteil. 2, v. 31, 1911, p. 477-495.) **QDA**

208. **Tian,** A. Sur la décomposition de l'eaux par la lumière ultra-violette. (Comptes rendus, Paris, v. 152, April 10, 1911, p. 1012-1014.) ***EO**

209. **Triquet,** P. G. Apparatus for sterilizing liquids by means of ultra-violet rays. (English patent, 1911, no. 9047.) **Patent Room**

Tubular mercury vapor lamps are fitted in a cylindrical chamber. Various methods of mounting the lamps are described.

210. —— Automatic apparatus for the sterilization of water by means of ultra-violet rays. (French patent, 1911, no. 441, 457.) **Patent Room**

211. **Ultra-violet** light for sterilization. (Electrical review and western electrician, Chicago, v. 58, June 3, 1911, p. 1091.) **VGA**

212. **Ultra-violet** light from the arc. (Electrical review and western electrician, Chicago, v. 58, April 29, 1911, p. 844.) **VGA**

213. **Walkey,** W. R. Apparatus for the sterilization of milk, beer, water or other liquids. (English patent, 1911, no. 16,110.) **Patent Room**

214. **Water** sterilization by the ultra-violet rays. (Electrical review and western electrician, Chicago, v. 59, Oct. 28, 1911, p. 890.) **VGA**

Gives cost data.

215. **Williams,** Charles H. Observations on the effects of the light of the mercury-vapor lamp on the eye. (Electrical world, New York, v. 58, Sept. 2, 1911, p. 550-552.) **VGA**

Gives a summary of the results of an ophthalmological examination of a number of persons who have worked for long periods by the mercury arc.

216. **Wood,** R. W. Recent experiments with invisible light. (Smithsonian Institution, Report, Washington, 1911, p. 155-166.) ***EA**

## 1912

217. **Action** of ultra-violet rays on vegetation. (Scientific American supplement, New York, v. 74, Aug. 17, 1912, p. 111.) **†† VA**

218. **Anderson,** A., and H. N. MORRISON. On contact difference of potentials, and the action of ultra-violet light. (Philosophical magazine, London, v. 24, Aug., 1912, p. 302-307.) **OA**

219. **Berthelot,** Daniel. Les lampes en quartz à vapeur de mercure dans le vide; leur emploi à l'éclairage et à la production de radiations ultraviolettes; leurs altération lentes ou brusques. (Bulletin de la Société internationale des électriciens, Paris, série 3, tome 2, June, 1912, p. 357-391.) **VGA**

Review of experiments with ultra-violet rays.

220. **Berthelot,** Daniel, and HENRY GAUDECHON. Action des rayons ultraviolets sur les carbures d'hydrogène gazeux. (Comptes rendus, Paris, v. 155, 1912, p. 521-522.) ***EO**

221. —— Décomposition photolytique des poudres sans fumée par les rayons ultraviolets. (Comptes rendus, Paris, v. 154, Jan. 22, 1912, p. 201-203.) ***EO**

Abstract in Journal of the Society of Chemical Industry, London, v. 31, 1912, p. 204, *VOA.*

222. —— Décomposition photolytique des poudres sans fumée, de l'acide picrique et du picrate d'ammoniaque par les rayons ultraviolets. (Comptes rendus, Paris, v. 154, Feb. 19, 1912, p. 514-517.) ***EO**

223. —— Sur la photolyse du saccharose par les rayons ultraviolets. (Comptes rendus, Paris, v. 155, 1912, p. 1016-1018.) ***EO**

224. —— Photolyse des sucres à fonction cétonique par la lumière solaire et par la lumière ultra-violette. (Comptes rendus, Paris, v. 155, 1912, p. 401-403.) ***EO**

Abstract in Society of Chemical Industry, Journal, London, v. 31, 1912, p. 847, *VOA.*

Digitized by Google

*1912, continued.*

**225. Bielecki,** Jan, and Victor Henri. Quantitative Untersuchungen über die Absorption ultra-violetter Strahlen durch Alkohole, Saüren, Ester, Aldehyde und Ketone der Fettreihe. (Deutsche chemische Gesellschaft, Bericht, Berlin, Jahrg. 45, Sept. 28, 1912, p. 2819-2825.) **PKA**

**226. Bielecki,** Jan, and René Wurmser. Action des rayons ultraviolets sur l'amidon. (Comptes rendus, Paris, v. 154, May 28, 1912, p. 1429-1432.) ***EO**

**227.** —— Ueber die Wirkung ultravioletter Strahlen auf Stärke. (Biochemische Zeitschrift, Berlin, v. 43, 1912, p. 154-164.) **PPB**

**228. Coblentz,** W. W. Special energy distribution of neon and helium. (Electrical world, New York, v. 59, Feb. 17, 1912, p. 365-366.) **VGA**

On progress in vacuum tube illuminants.

**229. Craig,** C. F. Photographing with invisible light. (Technical world, Chicago, v. 16, Feb., 1912, p. 699-707.) **VDA**

**230. Effect** of illuminants on vegetation and animal life. (Illuminating engineer, London, v. 5, March, 1912, p. 166.) **VOKA**

**231. Emich,** Fr. Chemische und andere Wirkungen des ultra-violetten Lichtes. (Naturwissenschaftlicher Verein für Steiermark, Mitteilungen, Graz, v. 48, 1912, p. 450-452.) **PQA**

**232. Erlwein,** G. Die Reinigung des Trinkwassers von Bakterien mittelst Ozons und ultravioletter Strahlen. (Wasser und Abwasser, Leipzig, v. 5, Sept. 14, 1912, p. 555-556.) **VDL**

**233. Experiments** with the ultra-violet rays. (Illuminating engineer, London, v. 5, July, 1912, p. 357.) **VOKA**

**234. Girard,** F. The quartz mercury vapour lamp for alternating currents. (Electrical review, London, v. 71, Sept. 20, 1912, p. 443-444.) **VGA**

**235. Henri,** Victor, and A. Ranc. Décomposition de la glycérine par les rayons ultraviolets. (Comptes rendus, Paris, v. 154, May 6, 1912, p. 1261-1263.) ***EO**

**236. Ives,** Herbert E. Study of the light from the mercury arc. (Electrical world, New York, v. 60, Aug. 10, 1912, p. 304-305.) **VGA**

**237. Ludlam,** E. B. The action of ultraviolet light chlorine. (London, Edinburgh and Dublin philosophical magazine, London, series 6, v. 23, 1912, p. 757-772.) **OA**

**238. Luminescence** analysis. (Scientific American supplement, New York, v. 74, Oct. 19, 1912, p. 253-254.) **†† VA**

Describes new test for chemicals with the aid of ultra-violet light.

**239. Marmier,** L. Action des rayons ultra-violets sur l'hyposulfite de sodium. (Comptes rendus, Paris, v. 154, Jan. 2, 1912, p. 32-33.) ***EO**

**240. Massol,** L., and Faucon. Absorption des radiations ultra-violettes par les alcools saturés de la série grasse. (Société chimique de France, Bulletin, Paris, série 4, v. 11, July 12, 1912, p. 931-935.) **PKA**

**241. Mathews,** J. H., and L. H. Dewey. A quantitative study of some photochemical effects produced by ultra-violet light. (Eighth International Congress of Applied Chemistry, New York, 1912, Original communications, section 9, photochemistry, v. 20, p. 247-257.) **PKR**

The action of ultra-violet light on solutions of sodium sulphite, potassium permanganate, potassium bichromate and oxalic acid was studied.

**242. Michaud,** G. Curious cases of selective reflection in ultra-violet light. (Science, New York, new series, v. 36, 1912, p. 415-416.) **OA**

**243. Michaud,** G., and F. Tristan. How to make an ultra-violet ray objective. (Scientific American, New York, v. 107, Sept. 28, 1912, p. 257.) **†† VA**

**244. Miller,** Warren H. French and German quartz tube mercury-vapor lamps. (Electrical world, New York, v. 60, July 27, 1912, p. 197-198.) **VGA**

Describes the design and operation and gives data as to cost and service.

**245. Notes** on the quartz mercury vapour lamp. (Illuminating engineer, London, v. 5, Oct., 1912, p. 469-474.) **VOKA**

**246. Peter,** H. Neuere Sterilisierungsmethoden für grössere Wassermengen, ihre technische und wirtschaftliche Anwendbarkeit. (Journal für Gasbeleuchtung und Wasserversorgung, München, v. 55, July 6, 1912, p. 645–649.) **VOA**

Compares fourteen methods of sterilization, with costs.

**247. Quartz** mercury vapour lamp. (Electrician, London, v. 69, Sept. 20, 1912, p. 994-997.) **VGA**

Gives underlying principles of these lamps.

**248. Rayons** ultra-violets et leur applications. Abbeville: Imprimerie F. Paillard [1912]. 63(1) p. 8°. (Mois scientifique et industriel. Bibliothèque pratique. no. 19.)

**249. Recklinghausen,** Max, and others. Perfectionnements aux appareils de stérilisation par les rayons ultra-violets. (French patent, 1912, no. 453,191.) **Patent Room**

**250. Schneckenberg,** Erich. Chemische Sterilisierungs-Schnellproben bei Ozon- und bei Ultraviolett-Wasserwerken. (Jour-

Digitized by Google

*1912, continued.*

nal für Gasbeleuchtung und Wasserversorgung, München, v. 55, May 4, 1912, p. 432-433.) VOA

**251. Schultz,** L. G. Weather and the ultra-violet radiations of the sun. (Nature, London, v. 90, Sept. 19, 1912, p. 68-70.) OA

**252. Sterilization** of water by ultra-violet light. (Engineering record, New York, v. 67, April 19, 1912, p. 429.) VDA

**253. Swetz,** Alexander. Neue Methoden der Trinkwasserreinigung zur Wasserversorgung der Städte. (Zeitschrift des Oesterreichischen Ingenieur- und Architekten-Vereines, Wien, v. 64, May 17, 1912, p. 305-310.) VDA

A review of the recent methods discussed at the International Hygiene Congress at Dresden.

**254. Ultra-violet** light sterilizer for Austrian army. (Scientific American, New York, v. 107, Dec. 14, 1912, p. 515.) †† VA

**255. Ultra-violet** light water sterilization on a large scale. (Electrical review and western electrician, Chicago, v. 60, April 6, 1912, p. 680.) VGA

Test shows process highly efficient for municipal purposes.

**256. Ultra-violet** rays. (Canadian engineer, Toronto, v. 22, Jan. 11, 1912, p. 129-132.) VDA

**257. Ultra-violet** rays. (Engineering magazine, New York, v. 42, March, 1912, p. 966-968.) VDA

Describes the lamps used in sterilization of water.

**258. Ultra-violet** rays for water sterilization. (Electrical review and western electrician, Chicago, v. 61, July 6, 1912, p. 40.) VGA

**259. Violet** ray sterilization of drinking water in Chicago. (Engineering record, New York, v. 66, July 27, 1912, p. 110-111.) VDA

Sterilization of 150 gallons per hour of Lake Michigan water by ultra-violet rays for the bottle trade.

**260. Wassersterilisierung** durch ultraviolette Strahlen. (Journal für Gasbeleuchtung und Wasserversorgung, München, v. 55, Nov. 16, 1912, p. 1126-1128.) VOA

**261. Wassersterilisierung** durch ultraviolette Strahlen. (Journal für Gasbeleuchtung und Wasserversorgung, München, v. 55, Oct. 26, 1912, p. 1058.) VOA

**262. Water** purification by the ozone and ultra-violet ray methods. (Water works journal, Pittsburgh, v. 5, Oct., 1912, p. 10-11.) VDL

**263. Weigert,** Fritz. Die Ozonzersetzung im ultravioletten Licht. (Zeitschrift für physikalische Chemie, Leipzig, v. 80, 1912, p. 78-106.) PKA

**264.** —— Eine Quecksilberlampe für quantitative photochemische Untersuchungen im Ultraviolett. (Zeitschrift für physikalische Chemie, Leipzig, v. 80, 1912, p. 67-77.) PKA

## 1913

**265. Action** of ultra-violet light on animal organism. (Scientific American, New York, v. 109, Sept. 13, 1913, p. 208.) †† VA

**266. Alger,** Ellice M. Illumination and eyestrain. (Illuminating Engineering Society, Transactions, New York, v. 8, March, 1913, p. 130-148.) VOKA

**267. Berthelot,** Daniel. Les rayons ultraviolets et leurs récentes applications chimiques et biologiques. (Société des ingenieurs civils de France, Mémoires et compte rendu de travaux, Paris, année 66, Dec., 1913, p. 668-680.) VDA

**268. Boubée,** Paolo. I più recenti studii sui raggi ultra-violetti e loro applicazioni. (Reale istituto d'incoraggiamento di Napoli, Atti, Napoli, serie 6, v. 64, 1913, p. 75-80.) *ER

**269. Bovie,** W. T. Preliminary note on the coagulation of proteins by ultra-violet light. (Science, New York, new series, v. 37, Jan. 3, 1913, p. 24-25.) OA

**270.** —— Temperature coefficient of the coagulation caused by ultra-violet light. (Science, New York, new series, v. 37, March 7, 1913, p. 373-375.) OA

**271. Davies,** R. Wassersterilisation durch ultraviolettes Licht. (Journal für Gasbeleuchtung und Wasserversorgung, München, v. 56, Aug. 16, 1913, p. 823.) VOA

**272. Defregger,** Franz Peter. Über ein von H. Th. Simon angegebenes Spektral-Photometer für Ultraviolett. Leipzig: J. A. Barth, 1913. 70 p., 1 l., 1 pl. 8°. PAH p.v.28, no.3

**273. Henri,** Victor. Eine neue Lampe mit sehr starker Ultraviolettstrahlung und ihre Anwendung zur Sterilisation grosser Wassermengen. (Journal für Gasbeleuchtung und Wasserversorgung, München, v. 56, June 21, 1913, p. 598.) VOA

**274.** —— Über die Beziehung zwischen der Reaktionsfähigkeit der Körper und der Absorption ultravioletter Strahlen. (Chemiker-Zeitung, Cöthen, v. 37, Aug. 14, 1913, p. 977.) VOA

**275. How** inventors use ultra-violet rays. (Scientific American, New York, v. 109, Sept. 1, 1913, p. 335-336.) †† VA

**276. Mueller,** Arno. Über Wassersterilisation mittels ultravioletter Strahlen. (Journal für Gasbeleuchtung und Wasserversorgung, München, v. 56, Oct. 11, 1913, p. 1014-1015.) VOA

Digitized by Google

*1913, continued.*

277. **Otto,** M. P. Sterilisieren von Wasser durch ultraviolette Strahlen. (Journal für Gasbeleuchtung und Wasserversorgung, München, v. 56, May 31, 1913, p. 528.) **VOA**

278. **Photography** in illuminating engineering. (Illuminating Engineering Society, Transactions, New York, v. 8, Oct., 1913, p. 354-355.) **VOKA**

279. **Production** of ultra-violet rays. (Electrical review and western electrician, Chicago, v. 62, April 19, 1913, p. 813.) †† **VGA**

A new form of lamp for producing ultra-violet rays perfected by the Zeiss Optical Works, Jena, Germany.

280. **Recklinghausen,** Max. Neue Ergebnisse bei der Wassersterilisation durch ultra-violette Strahlen. (Wasser und Abwasser, Leipzig, v. 6, May 24, 1913, p. 501-502.) **VDL**

281. —— Purifying water by the action of ultra-violet light. (Scientific American, New York, v. 109, July 19, 1913, p. 48.) †† **VA**

282. —— Water sterilization by ultra-violet rays. (Electrical review, London, v. 73, Sept. 26, 1913, p. 516.) **VGA**

283. —— Water sterilization by ultra-violet rays. (Electrical world, New York, v. 62, July 26, 1913, p. 181-183.) **VGA**

284. **Schwarz,** L., and D. Aumann. Über Wasserhandlung mit ultravioletten Strahlen. (Journal für Gasbeleuchtung und Wasserversorgung, München, v. 56, May 31, 1913, p. 520-522.) **VOA**

285. **Seager,** James A. Water sterilization by ultra-violet rays. (Municipal engineering, Indianapolis, v. 45, Nov., 1913, p. 415-418.) **VDA**

286. **Violet** rays in zinc mining. (Illuminating engineer, London, v. 6, Sept., 1913, p. 454.) **VOKA**

287. **Walter,** Johann. Verfahren zur Herbeiführung chemischer Reactionen zwischen Flüssigkeiten und Gasen unter Verwendung von katalytisch wirksamen Stoffen oder chemisch wirksamen Strahlen. (Seifensieder Zeitung, Augsburg, v. 40, April 23, 1913, p. 442-444.) †† **VON**

288. **Water** sterilization by ultra-violet light. (Scientific American supplement, New York, v. 75, June 7, 1913, p. 356.) †† **VA**

Explains the method used in a large commercial school in Paris.

289. **Wood,** Robert W. Detecting raised checks with ultra-violet rays. (Scientific American, New York, v. 108, May 24, 1913, p. 475.) †† **VA**

290. —— Photography by invisible light. (Scientific American, New York, v. 109, Nov. 15, 1913, p. 380-381, 385-387.) †† **VA**

291. **Young,** Meredith. Light and sight. (Illuminating engineer, London, v. 6, Nov., 1913, p. 566-568.) **VOKA**

1914

292. **Berthelot,** Daniel. Les rayons ultraviolets et leurs récentes applications chimiques et erologiques. (Cosmos, Paris, nouv. série, v. 70, 1914, p. 436-440.) **OA**

293. —— Sur les divers modes de photolyse de l'acide oxalique par les rayons ultraviolets de differentes longueurs d'onde. (Comptes rendus, Paris, v. 158, June 15, 1914, p. 1791-1793.) * **EO**

294. **Bielecki,** Jan, and Victor Henri. Influence de la liaison éthylénique et des groupes carbonyl et carboxyl sur l'absorption des rayons ultraviolets. (Comptes rendus, Paris, v. 158, 1914, p. 567-570.) * **EO**

295. **Chauchard,** A. Action des rayons ultraviolets monochromatiques sur l'amylase et la lipase du suc pancréatique. (Comptes rendus, Paris, v. 158, June 2, 1914, p. 1575-1577.) * **EO**

296. **Delbet,** Pierre, and Armand Beauvy. Étude comparée de l'action des rayons ultra-violets sur le pouvoir hemolytique et sur l'état colloidal du sérum sanguin. (Comptes rendus, Paris, v. 159, July 20, 1914, p. 278-281.) * **EO**

297. **Disinfecting** the mouth with ultra-violet rays. (Scientific American supplement, New York, v. 78, Nov. 21, 1914, p. 331.) **VA**

298. **Evans,** W. A. D. Mercury-vapor quartz lamp. (Illuminating Engineering Society, Transactions, New York, v. 9, Jan., 1914, p. 1-24.) **VOA**

299. **Ham,** W. R., and others. Photographic null method for measuring absorption in the ultra-violet. (Franklin Institute, Journal, Philadelphia, v. 178, Sept., 1914, p. 299-328.) **VA**

300. **Helbronner,** André, and G. Bernstein. Sur la vulcanisation des solutions de caoutchouc par les rayons ultraviolets. (Comptes rendus, Paris, v. 158, 1914, p. 1343-1345.) * **EO**

301. **Henri,** Victor. Ultra-violet light and bacteria. (Electrical review, London, v. 74, May 8, 1914, p. 768.) **VGA**

Action of ultra-violet radiation upon anthrax bacilli.

302. **Henri,** Victor, and Venceslas Moycho. Action des rayons ultraviolets monochromatiques sur les tissus. (Comptes rendus, Paris, v. 158, May 25, 1914, p. 1509-1511.) * **EO**

Digitized by Google

*1914, continued.*

303. **Houghton,** E. M., and Lewis Davis. A study of the germicidal action of ultra-violet rays. (American journal of public health, Boston, v. 4, 1914, p. 224-240.) **SPA**
Bibliography, p. 240.

304. **Michaud,** G., and F. Tristan. Fleurs ultra-violetts. (La Nature, Paris, v. 42, Jan. 17, 1914, p. 118.) **OA**

305. —— Flowers photographed with invisible light. (Scientific American, New York, v. 111, Oct. 10, 1914, p. 301-302.) †† **VA**

306. **Quartz** lamps on alternating current circuits. (Electrical review and western electrician, Chicago, v. 64, June 13, 1914, p. 1195.) **VGA**
Used in connection with a mercury-arc rectifier.

307. **Quartz** lamps on alternating current circuits. (Electrical review and western Electrician, Chicago, v. 64, June 27, 1914, p. 1292.) **VGA**

308. **Ranc,** Albert. Untersuchungen über die Wirkung von ultravioletten Strahlen auf die Lävulose. Bildung von Formaldehyd und Kohlenoxyd. (Biochemische Zeitschrift, Berlin, v. 64, 1914, p. 257-287.) **PPB**

309. **Recent** practice with ultra-violet rays. (Surveyor, London, v. 46, 1914, p. 321-322.) **VDA**

310. **Recklinghausen,** Max. Purification of water by ultra-violet rays. (Engineering record, New York, v. 69, May 23, 1914, p. 586.) **VDA**

311. —— Purifying water by electricity. (Isolated plant, New York, v. 6, Sept., 1914, p. 46.) **VGMB**

312. —— Sterilizing the water of swimming pools with ultra-violet rays. (Scientific American, New York, v. 111, Aug. 15, 1914, p. 120.) **VA**

313. **Rideal,** Samuel, and Eric K. Rideal. Ultra-violet light. (In their: Water supplies. London, 1914. 8°. p. 207-212.) **VDL**

314. **Secerov,** S. Sur l'influence des rayons ultra-violets sur la coloration des poils des lapin et des cobayes. (Comptes rendus, Paris, v. 158, June 15, 1914, p. 1826-1828.) * **EO**

315. **Ultra-violet** ray water sterilisers. (Engineer, London, v. 118, Oct. 30, 1914, p. 422-423.) **VA**

316. **Ultra-violet** rays for water purification in army service. (Scientific American, New York, v. 111, Nov. 28, 1914, p. 436.) **VA**

317. **Vulcanization** of rubber solutions by the ultra-violet rays. (India rubber world, New York, v. 51, Dec. 1, 1914, p. 130.) **VMV**

Digitized by Google

# AUTHOR INDEX

*Numbers refer to individual entries*


Agulhon, H., 160.
Airey, Harold Morris, 60.
Alger, Ellice M., 266.
Anderson, A., and H. N. Morrison, 218.
Aubel, Edm., 87.
Aumann, D. *See* Schwarz, L., and D. Aumann.

Baker, W. C., 56.
Baly, E. C. C., and C. H. Desch, 62.
Banque du Radium, 108, 109, 161.
Baskerville, Charles, 64.
Beattie, J. C., 43.
Beauvy, Armand. *See* Delbet, Pierre, and Armand Beauvy.
Bechstein, O., 47.
Bell, Lewis, 162.
Bellile, P., 88.
Bernstein, G. *See* Helbronner, André, and G. Bernstein.
Berthelot, Daniel, 163, 219, 267, 292, 293.
Berthelot, Daniel, and Henry Gaudechon, 110, 164, 165, 220, 221, 222, 223, 224.
Bichat, M. E., 31.
Bielecki, Jan, 294.
Bielecki, Jan, and Victor Henri, 225, 294.
Bielecki, Jan, and René Wurmser, 226, 227.
Bierry, Henri, 166.
Bierry, Henri, and others, 111, 167.
Billon-Daguerre, 89.
Birch, and Hirschfeld, 70.
Black, Nelson Miles, 168.
Blondel, A., 71.
Blyth, A. Wynter, 53.
Borel, G. Adolphe, 41.
Borgmann, J., 32.
Boubee, Paolo, 268.
Bovie, W. T., 269, 270.
Brunton, David W., 90.
Bujwid, Odo, 169, 170.
Buss, O., 44.
Bussion, H., 48.
Bussmann, Oskar, 65, 72, 91.
Busson, H., and Ch. Fabry, 171.

Cernovodeanu, Mlle. P., and Victor Henri, 112, 113.
Chardonnet, E., 19, 21.
Chauchard, A., 295.
Chauchard, A., and B. Mazoué, 172.
Chisholm, John. *See* Don, John, and John Chisholm.
Coblentz, W. W., 228.
Colin, G. *See* Rochaix, A., and G. Colin.
Cornu, A., 13, 14, 17, 20, 29.
Courmont, Jules, 173, 174, 175, 176.
Courmont, Jules, and Ch. Nogier, 177, 178.
Courmont, Jules, and Th. Nogier, 92, 115, 116.
Courmont, Jules, and others, 93.
Craig, C. F., 229.
Crookes, Sir William, 57.

Daire. *See* Dornic, and Daire.
Davies, R., 271.
Davis, Lewis. *See* Houghton, E. M., and Lewis Davis.
Deeleman, 117.
Defregger, Franz P., 272.
Delbet, Pierre, and Armand Beauvy, 296.
Demoussy. *See* Maquenne, L., and Demoussy.
Desch, C. H. *See* Baly, E. C. C., and C. H. Desch.
Deslandres, H., 33.
Dewar, J. *See* Liveing, G. D., and J. Dewar.
Dewey, L. H., 241.
Dobbie, J. *See* Hartley, W. N., and J. Dobbie.
Don, John, and John Chisholm, 179.
Dornic, and Daire, 94.
Dussaud, 54.




Digitized by Google

Ebert, H. *See* Wiedemann, E., and H. Ebert.

Eder, Joseph M., and E. Valenta, 40.

Eisenlohr, W., 2.

Emich, Fr., 231.

Erlwein, G., 182, 232.

Euler, H., and H. Ohlsén, 183.

Evans, W. A. D., 298.

Fabry, Ch. *See* Busson, H., and Ch. Fabry.

Faucon. *See* Massol, L., and Faucon.

Feige, A. *See* Urbain, E., and A. Feige; *also* Urbain, E., and others.

Franke, A. *See* Pribram, R., and A. Franke.

Gariel, 120.

Garnier, A. R., 121.

Gaudechon, Henry. *See* Berthelot, Daniel, and Henry Gaudechon.

Girard, F., 234.

Glatzel, Bruno, 55.

Godfrey, Hollis, 75.

Graebe, H., 42.

Grant, Kenneth C., 122.

Grimm, and Weldert. 184, 185.

Guillemin, M., 3.

Guntz, A., and J. Minguin, 186.

Ham, W. R., and others, 299.

Hammer, William J., 58.

Hartley, W. N., 22, 27, 34.

Hartley, W. N., and J. Dobbie, 49.

Helbronner, André, and G. Bernstein, 300.

Helbronner, André, and M. Recklinghausen, 187, 188, 189.

Henri, Victor. 190, 273, 274, 301. *See also* Cernovodeanu, Mlle. P., and Victor Henri; *also* Bielecki, Jan, and Victor Henri.

Henri, Victor, and Venceslas Moycho, 302.

Henri, Victor, and A. Ranc, 235.

Henri, Victor, and Joseph Schnitzler, 97.

Henri, Victor, and others. 98, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 191, 192, 193.

Henri-Cernovodeanu, Mme. V. 133. *See also* Cernovodeanu, Mlle. P., and Victor Henri.

Henry, J., 45.

Herschel, A. S., 11.

Hirschfeld. *See* Birch, and Hirschfeld.

Hopfeld, Robert, 77.

Houghton, E. M., and Lewis Davis, 303.

Ives, Herbert E., 236.

Kelvin, Lord, 46, 50.

Kernbaum, Miroslaw, 99, 100.

Kinraide, Thomas B., 63.

Landau, Marc, 194.

Leblanc, Maurice, the younger, 134, 135.

Le Bon, Gustave, 195.

Lehmann, H., 136, 137.

Liveing, G. D., and J. Dewar, 23, 24, 37.

Lombard, Maurice, 138.

Ludlam, E. B., 237.

Mannich, C., 101.

Maquenne, L., and Demoussy, 102.

Marmier, L., 239.

Mascart, M., 5, 6, 7, 8.

Massol, L., 196.

Massol, L., and Faucon, 240.

Matthews, J. H., 241.

Maurain, and Warcollier, 103, 139.

Mazoué, B. *See* Chauchard, A., & B. Mazoué.

Michaud, G., 242.

Michaud, G., and F. Tristan, 243, 304, 305

Miller, Warren H., 140, 244.

Minguin, J. *See* Guntz, A., and J. Minguin.

Morrison, H. N. *See* Anderson, A., and H. N. Morrison.

Moycho, Venceslas. See Henri, Victor, and Venceslas Moycho.

Müller, Arno, 276.

Nogier, Ch. *See* Courmont, Jules, and Ch. Nogier.

Nogier, Thomas, 104, 141, 197. *See also* Courmont, Jules, and Th. Nogier.

Ohlsén, H. See Euler, H., and H. Ohlsén.

Otto, M. P., 142, 277.

Peter, H., 247.

Pidduck, F. B., 105.

Pierce, R. F., 198.

Pougnet, Jean, 143, 199.

Pribram, R., and A. Franke, 200.

Digitized by Google

Ranc, A., 308. *See also* Henri, Victor, and A. Ranc.

Recklinghausen, Max, 146, 201, 280, 281, 282, 283, 310, 311, 312. *See also* Helbronner, André, and M. Recklinghausen.

Recklinghausen, Max, and others, 249.

Remonce, R., 202.

Rideal, Eric K. *See* Rideal, Samuel, and Eric K. Rideal.

Rideal, Samuel, and Eric K. Rideal, 313.

Rilliet, A. A. *See* Soret, J. L., and A. A. Rilliet.

Rochaix, A., and G. Colin, 203.

Salm-Horstmar, 4.

Sauer, L., 10.

Scal, C. *See* Urbain E., and C. Scal; *also* Urbain, E., and others.

Schanz, Fritz, and Karl Stockhausen, 81, 82.

Schjerning, W., 30.

Schneckenberg, Erich, 250.

Schnitzler, Joseph. *See* Henri, Victor, and Joseph Schnitzler.

Schoenn, J. L., 18.

Schultz, L. G., 251.

Schwarz, L., and D. Aumann. 204, 205, 284.

Seager, James A., 285.

Secerov, S., 314.

Sekulic, M., 9.

Soret, J. L., 12, 15, 25, 26.

Soret, J. L., and A. A. Rilliet, 16.

Steinmetz, C. P., 148.

Stockhausen, Karl, 84, 152. *See also* Schanz, Fritz, and Karl Stockhausen.

Stokes, 1.

Stoklasa, Julius, and others, 207.

Swetz, Alexander, 253.

Tian, A., 208.

Triquet, P. G., 209, 210.

Tristan, F. *See* Michaud, G., and F. Tristan.

Urbain, E., and A. Feige, 154.

Urbain, E., and C. Scal, 155.

Urbain, E., and others, 156.

Valenta, E. *See* Eder, Joseph M., and E. Valenta.

Vandevelde, A. J. J., 157.

Voege, W., 86, 106.

Walkey, W. R., 213.

Walter, Johann, 287.

Warcollier. *See* Maurain, and Warcollier.

Wartenberg, H., 158.

Weigert, Fritz, 263, 264.

Weldert. *See* Grimm, and Weldert.

Wiedemann, E., and H. Ebert, 38, 39.

Williams, Charles H., 215.

Wilson, C. T. R., 51.

Wood, R. W., 59, 216, 289, 290.

Wurmser, René. *See* Bielecki, Jan, and René Wurmser.

Young, Meredith, 291.

Zenger, Ch. V., 28.

Zickler, Karl, 52.

Zimmerman, J. D., 159.

Digitized by Google

# SUBJECT INDEX

*Numbers refer to individual entries*


Absorption of ultra-violet rays, 12, 16, 17, 19, 20, 23, 25, 30, 37, 40, 49, 55, 62, 105, 158, 274, 294, 299.

Acetic acid, Action on, 97.

Acetylene gas, Effect on, 114.

Acids, Absorption by, 158, 225.

Air, Conductive effect produced in, 46.

Albumenoids, Ultra-violet absorption, 53.

Alcohol, Absorption of rays by, 225, 240.

Aldehyde, Absorption of rays by, 225.

Amylase, Action on, 172, 295.

Analysis, Luminescence, 238.

Animal organism, Action on, 265.

Apparatus for treating liquids, 108, 109, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 187, 188, 189, 191, 192, 193, 197, 201, 209, 210, 213, 249.

Bacillus, Action on, 96, 113, 203.

Bactericidal effect, 151, 153, 169, 170, 211, 232, 275, 301, 303.

Beer sterilization, 213.

Bees, 69.

Blood, Effect on, 296.

Blood pigments, Action on, 42.

Caoutchouc. *See* Rubber solutions.

Carbohydrates, Action on, 111.

Carbon compounds, Absorption spectrum, 49.

Chemical action, 2.

Chlorine, Action on, 237.

Cider, Action on, 103.

Coagulation, 269, 270.

Colloids, Penetration of, 92.

Colors, Influence on, 314.

Cost data, 214, 244, 246.

Cyanogen, Effect on, 114.

Detector of ultra-violet rays, 73.

Diastase, Action on, 160.

Disease, Treatment of, 58.

Disinfection, 297.

Electric discharge, Influence on, 32, 35, 38, 39, 48, 56.

Electrostatic charge, Action on, 31, 36.

Ethylene gas, Effect on, 114.

Eye, Effect on, 15, 25, 66, 67, 71, 74, 76, 78, 79, 80, 81, 82, 83, 84, 85, 86, 88, 95, 118, 120, 147, 152, 168, 215, 234, 266, 291.

Eye, Protection of, 106, 162.

Fermentation by rays, 97, 103, 107, 139.

Filter, Ultra-violet rays, 136, 137.

Flour sterilization, 157.

Gases, Action on, 43, 50, 51, 220, 287.

Germicide properties of ultra-violet light, 96, 113, 144, 254, 303.

Glass, Absorption of rays, 30, 40, 41.

Glass, Opacity to rays, 162.

Glycerine, Action on, 167, 235.

Gunpowder (Smokeless), Action on, 221, 222.

Hydrocarbons, Ultra-violet spectrum of, 33.

Hydrogen, Ultra-violet spectrum of, 29, 220.

Iodine vapors, Effect on, 45.

Ketone, Absorption of rays by, 225.
Ketoses, Action on, 224.
"Kuch" lamp, 47, 65.

Lactic acid, Action on, 194.

Lamps, Carbon arcs, 279.

Lamps, Quartz mercury vapor, 47, 61, 63, 65, 72, 77, 91, 119, 121, 134, 135, 140, 159, 190, 198, 219, 234, 244, 245, 247, 273, 298, 306, 307.

Lamps, Quartz mercury vapor, deterioration, 177, 178.

Levulose, Action on, 308.

Liquids, Sterilization of. *See* Sterilization.

Microbes, Action on, 96, 113.

Microscope, Ultra-violet, 75.

Milk sterilization, 213.

Molecular action, 164.




Digitized by Google

Narcosis, 66.
Nitric and nitrous ethers, Absorption spectrum of, 16.
Nitrification by ultra-violet rays, 165.

Organic compounds, Photolysis of, 110.
Oxalic acid, Action on, 241, 293.
Oxygen, Absorption-spectrum of, 37.
Oxygen, Effect on, 114.
Oxyhydrocarbons, Ultra-violet spectrum of, 33.
Ozone, Effect on, 87.

Photochemical action of rays, 112, 241.
Photography, Ultra-violet light in, 68, 145, 229, 243, 278, 290, 304, 305.
Photometer, Spectral, 272.
Physiological effect of ultra-violet light, 148.
Picric acid, Action on, 222.
Plants. *See* Vegetation.
Potassium bichromate, Action on, 241.
Potassium permanganate, Action on, 241.
Potential, Contact difference of, 218.
Powder, Smokeless. *See* Gunpowder, Smokeless.
Proteins, Action on, 269.

Quartz mercury vapour lamps. *See* Lamps.
Quartz transparency, 195.
"Quartzlite" lamp, 119.

Radium, Ultra-violet spectrum of, 57.
Reflection, Curious cases of selective, 242.
Reflector, Fluorescent, 236.
Refrangibility of ultra-violet rays, 1, 4.
Rubber solutions, Action on, 300, 317.

Saccharine, Action on, 223.
"Silica" lamp, 119.
Smokeless powder. *See* Gunpowder, Smokeless.
Sodium hyposulphite, Action on, 239.
Sodium sulphite, Action on, 241.
Solar spectrum, Ultra-violet limit, 13, 14, 251.
Sound transmission by ultra-violet rays, 54.
Spectrum photography, 59.
Starch, Action on, 196, 226, 227.
Sterilization. *See under various heads as* Water, Milk, etc.
Sterilization cost data. *See* Cost data.
Sterilizer, 104, 108, 109, 123, 124, 129, 130, 131, 132, 141, 142, 201, 209, 210, 213, 249, 258, 315. *See also* Apparatus for treating liquids.
Sterilizer, Westinghouse Cooper Hewitt, 146.
Sucrose, Action on, 223.
Sucrose hydrolysis by ultra-violet rays, 183.
Swimming pools, Sterilization of, 312.

Telegraphy by ultra-violet light, 52.
Temperature, Effect of, on ultra-violet radiation, 180.
Tubercular bacillus, Action on, 133.
Tuberculine, Action on, 133.

Ultra-violet spectrum, 5, 7, 18, 22, 24, 27, 29, 34, 57.
Ultra-violet spectrum analysis, 44.

Vanilla pods, Action on, 199.
Vegetation, Action on, 3, 102, 143, 181, 207, 217, 230.
Visibility of ultra-violet rays, 8, 9, 10, 11, 21, 26, 28, 212.
Vulcanization by ultra-violet light, 300, 317.

Water, Decomposition of, 99, 208.
Water, Sterilization of, 93, 94, 98, 100, 104, 108, 109, 115, 116, 117, 122, 123, 124, 129, 130, 131, 132, 141, 142, 144, 146, 149, 150, 151, 154, 155, 156, 161, 163, 173, 174, 175, 176, 179, 182, 184, 185, 187, 188, 202, 204, 205, 206, 209, 211, 213, 214, 232, 246, 248, 249, 250, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 273, 276, 277, 280, 281, 282, 283, 284, 285, 288, 309, 310, 316.
Wave length, Determination of, 6.
Willemite in concentration-tailings, 90.
Wine, Action on, 97, 107, 139.

Zeiss Optical Works, 279.
Zinc mining, Ultra-violet rays used in, 286.

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Chem 5.41
Ultra-violet rays;
Cabot Science
003368623
3 2044 091 925 560

Digitized by Google